

RICHARD HIND CAMBAGE.
1859-1928.

(*Memorial Series No. 4.*)
(With Portrait.)

Cabbage designed and erected a life structure which rested on sure and strong foundations, one which was at once dignified, imposing, and eminently serviceable. He sought the truth always in his work; he was a wise and loved counsellor; a renowned peacemaker, although steadfastly setting his face against exhibitionism and chicanery in science; a man with true domestic instincts; an excellent citizen, passionately devoted to the cause of philanthropy, as well as to that of natural science.

Cabbage's scientific career was determined at a somewhat early period of life, and there were no breaks, or sharp cusps, to interrupt the even sweep of the curve marking the path of his continuous progress. Once having determined on a course of action he never looked back.

Possessed of an ambitious and progressive nature, he, even as a mere youth, saw very little hope of solid accomplishment in the joint working of a farm. He thereupon entered upon the profession of land surveying, which kept him in touch with Nature in all its moods. From this surveying apprenticeship, he passed on to high executive positions, not only in survey, but in scientific councils, which, however, were all of an honorary nature. As President and Secretary of many important scientific societies, his work brought him into intimate contact with all the leaders of scientific thought in Australasia. His relations with his colleagues were unusually harmonious, being singularly free from jealousies, or aversions of personal or professional nature. His marked tact and love of peace smoothed over many difficulties of the kind which naturally arise in discussions involving not only expenditure of important trust funds, but principles also of professional and scientific procedure.

He had no enemies, and all esteemed it a privilege to be his friend, even when he strongly opposed measures which, in his opinion, were not in accordance with true scientific spirit. His services were sought also in matters of public speaking at scientific functions, his voice for such being excellent—strong and pleasing, his method of address simple, clear, frank, convincing, and full of kindness.

Cabbage's whole scientific life might be summarized, on the one hand, as a gradual but uninterrupted progress from the position of a mere ardent lover of Nature, to that of a keen student becoming more impelled, by his own self-perfecting nature, to concentrate first on the general study of plants, then to confine attention to phanerogams, thence through a few families to two large genera; and, on the other hand, as the history of one who, step by step, passed from the status of simple membership in societies and institutions to positions of the highest administration in same. Rarely, indeed, does one see these two

admirable qualities developed in the same individual. But Cabbage could always be depended upon; once a scientific position had been accepted he saw it through thoroughly and cheerfully.

This gradual growth of an aptitude for specialization from an early, simple, and broad general love of Nature was merely an expression of his intense desire to understand the organic cosmos, which appealed so powerfully to his religious and aesthetic temperament. With this was coupled also the growing appreciation of the insufficiency of the ordinary individual span of life to compass the study of the cosmos as a whole. It was a natural sequence that he should undertake a disinterested and intensive study of a typical detail in Nature, such as the genus *Eucalyptus* or *Acacia*, as the best method of approach to the probable principle underlying all.

These progressive steps are plainly discernible. His boyhood and early adolescence on a farm facing the open sea, backed by high hills and rugged plateau slopes, the latter covered with magnificent forest and jungle growths, beheld the ordinary Nature student change into the ardent naturalist. Guiding the plough through the cultivation areas; learning to ride "buckjumpers"; or rough-riding after cattle "across country" in the wild fastnesses of the Milton hinterland, he was accustomed to the ways of all the native birds and animals. He knew, almost instinctively, what class of country he wandered into, from the general appearance of the vegetation, or from the familiar sounds of the birds around; whether near the sea, within the coastal ranges, on the high plateaus, the inland slopes, or the western plains. He could reproduce the calls of almost every bird and "animal" in the South Coast district, while his mimicry of the chatter of aborigines was indescribably faithful and humorous. Only, however, on rare occasions could he be persuaded to exercise these gifts of mimicry to his friends, as he had an abhorrence of public display of knowledge or skill.

Such was the grand early mental equipment which, later, was to express itself in an original contribution to our knowledge of plant associations in Eastern Australia.

When the necessity arose to leave the home, with all its cherished associations, and to face the outside world, with its keen competition, his strong domestic instincts produced an actual feeling of keen dislike towards certain natural objects encountered in the new sphere, and to the presence of which he had been accustomed daily during his previous home life. Thus for years he could scarcely endure the pungent scent, and blaze of purple bloom, of the mint-bush (*Prostanthera incisa*) in spring-time. "As I scrambled up the precipitous sides of the National Park gorges", he said, "clinging to the 'mint' bushes for support, and thinking of home at the same time, the scent of this beautiful shrub produced a strong sense of aversion in me." This was merely the natural outcome of the presence of an external stimulus, whereby he had been forced from a cherished spot containing certain plant associations which he loved, to another, with similar natural associations, but with a totally different residential environment.

His work as a surveyor led him into many strange and unsettled areas, preventing him, for very many years, from having much settled "home" life. Nevertheless, to one possessed of his strong domestic leanings, the ordinary routine life of a field surveyor was insufficient to satisfy the ever-present ideals of progress, and to keep the mind occupied satisfactorily between times. To this end he commenced seriously the study of botany, not with the view of becoming

a taxonomist, but rather with the object of understanding plant assemblages and their environment, especially in connection with temperature, rainfall, atmospheric humidity, soil, "aspect", and physiography, generally.

It was his custom, on long "outback" surveying undertakings, to note and collect all the main plant types occurring along the road (or railway line), the mile pegs being favourite data for locality reference. The specimens secured thus he studied later with the aid of detailed "lands" maps, and in this way gradually ascertained the general range of various endemic genera and species of phanerogams. The cryptogams, outside the vasculares, he did not study in detail, as, with few exceptions, they were not among the larger or conspicuous plants seen along his routes. From constant observation, aided by an intelligent use of a surveyor's tomahawk, his knowledge soon eclipsed that of Jem, the Splitter, and of whom Cambage himself continually said:

"His knowledge was this—he could tell in the dark
What timbers would split by the feel of the bark."

He would wax enthusiastic, and begin to quote from his favourite authors, Shakespeare and Scott, as soon as he saw the first outposts of a plant, hitherto unfamiliar, or unknown, to him, coming into view. He would examine the stranger, name it provisionally; note its peculiarities, whether xerophilous or otherwise, frequenter of forest, jungle, or open land, lover of sandy soil, acid swamp, drained hillside, bleak plateau, eastern or western fall, and so on. Upon the recurrence of similar geographical and soil conditions, in another area, he would commence the search for the expected "strangers", and his excitement and enthusiasm would run high as he found his expected plants and animals, one after the other. He would clap his companion's shoulder suddenly, and pointing repeatedly, but with increasing emphasis, rapidity, and precision, in a certain direction, he would exclaim:

"And still from copse and heather deep
Fancy saw spears and broadswords peep."*

"And there, my friend, peeps also the new eculapyt (or other rare plant) I have been expecting."

At the outset of each trip he would enter the name *Wahlenbergia gracilis* (blue-bell) on his list of plants seen, because he knew the ubiquitous nature of the little flower. So soon as he had seen it actually en route, he would stop at the nearest post-office and send a telegram to his old friend, J. H. Maiden: "Great news, have just seen *Wahlenbergia gracilis*." This little joke would cheer the hearts of Cambage and Maiden for days, and was merely an excuse to let off some superfluous exuberance of spirits. It helped Maiden wonderfully also, as in mind he saw himself with Cambage in the open gathering in the rich harvest of the Australian flora.

Like the late J. E. Carne, a former Government geologist of the State, Cambage appeared to have an intuitive knowledge of "direction", finding his way, as it were, instinctively, in the wildest areas of the eastern States. His knowledge of the individual species to be expected in various plant assemblages caused him, from geographical considerations, to criticize the accepted classification of certain species which he had noted, so to speak, out of their proper associations. In this connection it is not out of place to state the pre-eminence of Cambage in naming a species, at a glance, from a distance. From a horse-drawn vehicle, motor-car, or fast-moving train, he could detect the plants with

* Scott, "Lady of the Lake", Canto v, Stan. xi.

an accuracy which only those botanical colleagues who were accustomed to travel with him could appreciate or even believe. It was not that he was blind to the motto, "Wherefore by their fruits ye shall know them", but he knew also that the plants carried tell-tale vegetal characteristics on a larger scale, and that the sum total of these and other traces were as sure as the great test of the fruits. His keen eye detected at a glance their "habit" of growth, their place in the plant association, their seedling forms, their "sapling stage" characteristics, their adventitious growths, adult appearance, inflorescence, the soils they favoured, and so on.

In this way he was enabled to direct the attention of the official authorities on plant classification to the fact that plants included hitherto under certain well-known species should themselves be raised to specific rank, as being distinct from any type species hitherto described. Thus, when for the first time he found that "gidgea" was confined, in New South Wales, to the Trans-Darling area north of Broken Hill; that it was a gregarious type, with a peculiar habit; and with a penetrating odour all its own; he at once knew it to be distinct from the species of *Acacia* occurring farther east, and within which previously it had been included. It was only natural to name the important new species *Acacia Cambagei*. Similarly, he indicated the necessary raising of the "belah" (a "she-oak") to specific rank. His geographical and ecological notes were so convincing that the new species was named *Causuarina Cambagei*. So also for *Eucalyptus Cambagei*. Only trained field botanists would be able to recognize the skill and intuition needed in an amateur botanist, pressed hard by the exigencies of technical work and of travel, without herbarium facilities en route, to enable him to recognize the specific rank of types which had been described and included under other species by excellent herbaria botanists.

The peculiar method of clearing up the difficulty surrounding *Eucalyptus pulverulenta* (Simms) and *Eucalyptus pulviger* (Allan Cunningham) is an example of Cabbage's keen "bush" insight. *Eucalyptus pulverulenta* (Simms) was named from seedlings grown in England in 1819. Allan Cunningham found and named *Eucalyptus pulviger* in 1822. Cabbage wondered whether some confusion had not arisen in this connection, when he read the descriptions. Thereupon, in October, 1904, in company with J. H. Maiden, he visited the Cox's River in order to find Cunningham's locality. His knowledge of bushcraft led him easily to the tree answering Cunningham's description. (He had already found these trees at Cow Flat, near Bathurst, in 1900—hence his criticism.) He experimented with seeds collected from Cox's River, and obtained seedlings which produced flowers within three years and six months, so that it was possible for seeds collected at Cox's River in 1813 to have been sent to England, then grown and described by Simms in 1819. The description of *Eucalyptus pulverulenta* fitted the young plants of Cunningham's *Eucalyptus pulviger*, and thus an important point was settled satisfactorily in *Eucalyptus* taxonomy.

Gradually he was led from the simple Linnean classification of his plants into genera and species, to the recognition of their proper places in their families. This later step assisted him materially during the visit of the botanists attending the British Association Meeting in 1914.

Three great departures were made from his earlier "naturalist" collecting as time progressed, one being the recognition of the important edaphic, geographical station, and climatic "aspect", factors in the Australian vegetation; the second being the special attention directed to the genus *Eucalyptus*; and the

third being the special attention devoted to the seedling stages of the genus *Acacia*.

It is well known to students of soils that, with a rainfall exceeding a certain figure (proportioned to the temperature variations of a locality), the vegetation tends to become less and less dependent on the soil factor, as seen so well in the "tapestry" and swamp vegetation of western New Zealand, of New Guinea (rain forest), Java, and Ceylon. In Australia, however, owing to the long continued and generally low rainfall of the continent, the edaphic factor is one of the most important in the study of the endemic Australian flora. This point Cambage had studied closely, having selected the main types of Australian rocks, and obtained the quantitative chemical analyses of each. Thus, from the mere inspection of a typical rock specimen from an extensive geological formation or occurrence in Australia, and having the additional knowledge dealing with its position in latitude and longitude, the general height of the area concerned above sea level, he was able to forecast all the larger plant forms to be expected from such area.

The study of soil and climate led him, gradually, to specialize in the study of the Eucalypts. In this subject he attained eminence. The study of the genus *Eucalyptus* he commenced with the Rev. Dr. W. Woolls, for whom he made plant collections between 1880 and 1890, and from whom he received his first botanical lessons. Later he worked carefully over the various *Eucalyptus* species with his colleagues and friends, J. H. Maiden, Henry Deane, J. J. Fletcher, R. T. Baker, H. G. Smith, E. Cheel, and others.

His intimate acquaintance with the more generalized, or primitive, forms of the genus, coupled with the knowledge that the "Eucalyptus" fossils recorded from the various Tertiary deposits of the northern hemisphere did not at all suggest the forms of *Eucalyptus* as known to Australian botanists, led him to follow Bentham, Engler, Deane, and others, in rejecting as absurd the idea that the genus "*Eucalyptus*" had been cosmopolitan in its range, with later contraction of habitat to the Australasian region. His work, as also that of his colleagues, indicated, definitely, that this great genus, exceeding four hundred species, and exhibiting a most marked vitality and plasticity, had originated in Australia and had never moved far from the land of its birth.

The contemplation of the eucalypt monarchs of Eastern Australia, exceeding three hundred feet in height, in very many instances, stirred the aspiring side of Cambage's nature. The writer has seen Cambage and Maiden lost in wonder and admiration at the sight of these forest giants. During such reverent contemplation, one or the other of the two would never fail to make the remark to the effect that the close study of such magnificent organisms definitely tended to free the mind from any meanness or pettiness of character.

During his visit to Japan in 1926 as a Commonwealth delegate to the Third Pacific Science Congress, via the Malay Archipelago and the Philippine Islands, Cambage became much impressed with the idea that, not only had the Wallace and the Weber Lines been obstacles to any general spread of *Eucalyptus* beyond Australia, but that another and extremely important barrier had been opposed to their dispersion by the enormous "rain-forest" belt of New Guinea and the associated regions. This vast compound island arc, one of almost perpetual precipitation, was a sufficient barrier to eucalypt movement towards Asia, especially where associated with seaways instead of areas of relatively low rainfall.

Noteworthy, however, as were the contributions of Cabbage to our knowledge of the geographical distribution of *Eucalyptus*, they are eclipsed by his detailed observations on the youthful stages of *Acacia*.

The published work of his colleagues suggested that the ancestral form of *Acacia* was a tree or woody shrub, with leaves simply pinnate, a regular corolla, and with stamens definite and free, as suggested by a careful study of the genera *Mimosa*, *Parkia*, *Acacia*, and *Inga*, and of the closely-related family (Caesalpiniaceae) of the Cassias. Cabbage, with his great love for the weight, as well as the nature, of the evidence, determined to throw as much light as possible on this important problem, by the examination of the young stages of growth in the various species of the genus. He recognized the magnitude of the task which lay before one who should experiment conscientiously with the whole 700-1,000 species recorded (more than 500 endemic Australian species). In the first place there would be the difficulty experienced in securing seeds for planting; in the second, the extreme difficulties to be met in ascertaining whether the plants grown from seeds would be true to type; in the third place, the necessity for extensive garden facilities for the growing of numerous individuals in each species, and for making careful observations, measurements, notes, and photographs, of the several critical stages of seedling development. He decided thus to select typical plants as a beginning, and to confine his attention to the careful observation and description (for publication) of ten good species each year. Naturally his attention was specially turned towards the phyllodineous forms so characteristic of Australia.

The seeds chosen by him were examined carefully, the size, shape, and colour being noted. Six to eight seeds were planted in a pot. Notes were made of the dates of planting, and of the first appearance of the seedlings; the size, shape, and colour of the stem, cotyledons, first leaf, second leaf, and so on; also the distance apart of the leaves as measured along the stem.

One plant of each species, in the cotyledon stage, was secured, pressed, and described. Each leaf was pressed separately. It was found preferable to adopt this procedure, inasmuch as the earlier leaves became damaged, or fell off, if left to themselves on the plant, until the seedling had reached the final stage for observation purposes. These leaves were noted carefully and numbered, and were placed in position later on the plant for photographic records. The seedlings were allowed to grow until the adult foliage had developed definitely; pods and seeds were photographed with the seedling. *Acacia* species, to the number of 133, have been described in the *Journal of the Royal Society of New South Wales*. A number of other species were described fully and a number also in part, but not published because of Cabbage's sudden illness and death. "This work", according to Walkom, "is to be carried to completion at the Botany School of the University (Sydney) under the care of Professor T. G. B. Osborn."

In the work of tending, observing, and photographing the seedlings, his daughter, Miss M. Cabbage, assisted very materially, and to her also is due the preparation of the accompanying list of Cabbage's scientific publications.

Richard Hind Cabbage was born at Milton, New South Wales, on the 7th November, 1859. He received his early education at State and private schools. He was employed as a teacher, for a short time, in the Milton State School, under Mr. H. Skillman.

At the age of eighteen years he was attached, as assistant, to Mr. Surveyor M. J. Callaghan, with a view to entering the surveying profession. While with Mr. Callaghan he was engaged, firstly, in the districts surrounding Milton, passing thence to Yalwal, and later to National Park, in 1879 and 1880, at which time it was surveyed by Callaghan. At the time of that survey, the Park was practically inaccessible and almost unknown. It could be reached by the mail coach, which left the General Post Office, in Sydney, every morning for Kogarah; thence one had to make private arrangements to reach the Park itself. The Illawarra Line was not opened as far as Hurstville until 1884. "Exciting moments were experienced while crossing Port Hacking in a boat, behind which the saddle horses, firmly held, were accustomed to swim. The dingo was exceedingly common about National Park in those days, and the howling of numbers of these wild dogs of an evening, as they emerged from the Woronora Gorge", caused the youthful student Cambage to experience horripilation and a feeling of intense "creepiness", especially in the loneliness of a bush camp.

Part of his training was with Surveyor F. L. Burdett, in the Manly area. He studied mathematics under the late H. S. Hawkins, and obtained the designation of Licensed Surveyor in June, 1882, having previously passed the examination for Draftsman in the Lands Department.

After being engaged for three years as a draftsman in that Department, he was appointed, in 1885, to the Department of Mines as a mining surveyor.

From 1903 until 1918 he was a member of the Licensed Surveyors' Examination Board, and, from 1909 until 1915, Lecturer in Surveying at the Sydney Technical College.

Three times (1907-1909) he accepted the office of President of the Institute of Surveyors.

His duties as Mining Surveyor caused him to visit every mining field of importance in New South Wales, with the exception of Broken Hill, which he only visited as late as 1921, in another connection.

Many instances of the caprices of mining fortune came under his notice as years passed. During the silver boom in 1885, he was camped at Wiseman's Creek, near Bathurst, for a period exceeding two months, surveying leases for silver, and, with the exception of several blocks, the whole of the leases were abandoned within a few months.

He had a similar experience near The Peaks, at Burragorang, whereas, a mere couple of miles away, lay the rich silver lodes of Yerranderie, which, however, were not discovered until years after.

Again, during the great silver boom at Rivertree, Boorook, Boonoo Boonoo and Drake, he measured leases for silver month after month about 1887, only to see most of them abandoned shortly after measurement.

While surveying leases at Barmedman in December, 1893, he heard of the discovery of gold at a farming centre called Wyalong, a few miles away. The announcement caused no marked excitement, and few there were who could have foreseen the meteoric rise of this field, which produced, within a few years, gold to the value of £1,500,000.

Again, when Cambage was engaged measuring a gold lease, on the 26th December, 1896, over an old "prospecting" shaft at Mount Boppy, about twenty-eight miles easterly from Cobar, very few could have foreseen that this lease

covered the famous "inverted saddle" reef of Canbelego, which produced gold to the value of £2,000,000, approximately, between 1903 and 1918.

Cambage, in his humorous way, summarized one aspect of the history of gold and silver mining in the State by reference to an instance of faith in mining which came under his personal notice in New England about 1889.

"A promising-looking gold reef had been discovered in an uninhabited locality, and the land pegged around in all directions, over one hundred gold leases being applied for, though no additional discovery of any significance was made. A battery was being erected, on the original field, and, in the meantime, the whole energy of the new arrivals was devoted to the purpose of building a town. Allotments were 'pegged out', sold, 'jumped' by the original holders, and resold; buildings of sawn boards and galvanized iron were erected; shops opened; a progress committee formed; and a very large stump was planed carefully to do duty as a billiard table. Finally, the battery was completed, but the first 'crushing' put through proved the reef to be unpayable; the houses began to fall like houses of cards, and were carted whence they came. Old 'diggers', speaking of the incident later, would remark that there were two 'rushes' in connection with that field, one to it, and the other from it."

Severe variations in climatic conditions were encountered in the various country centres visited in succession. In the Cobar-Canbelego district the thermometer had been seen at 120° F. in the shade; in the west or trans-Darling area, 125° F. in the shade had been experienced, whereas in the Kiandra district severe storms had interrupted surveying operations, necessitating a struggle once by him of fifteen miles through snow averaging twelve to twenty-four inches in depth.

Cambage, through his duties as a mining surveyor, had an excellent knowledge of the main coal occurrences and resources of the State. In the year 1900 he was commissioned to ascertain exactly the position of certain colliery workings situated under the Newcastle Harbour and the neighbouring ocean, and to determine also the amount of cover between such workings and the bed of the harbour or ocean above. This official decision was made as an independent check on the colliery surveys, inasmuch as hundreds of lives were affected by the condition of these underground workings. Cambage was accustomed, in this new work, to quote Shakespeare's line, "How use doth breed habit in a man", as he himself became accustomed to the litter, difficulties, and dangers, of a coal mine, with no more than 150 feet of coal between him and the ocean, and with the sound of ocean waves and of passing steamers distinctly audible at times.

Other experiences of Cambage may serve to illustrate the many-sidedness of his scientific and technical experience, and the high opinion in which he was held as a capable and honourable official.

Immediately after the disastrous explosion at the Mount Kembla Colliery in 1902, when more than ninety lives were lost, he was commissioned to make an official and detailed underground survey in the vicinity of the actual explosion about a mile from the colliery entrance, in order that a plan might be prepared indicating the position of objects, such as fragments of skips, rails, and other colliery material, as they were found after the explosion, from which the direction of the explosive activity might be deduced. His "careful and exhaustive examination" provided some of the principal evidence upon which the findings of the Royal Commission, appointed to deal with such matters, were based. This

finding by the Commission reversed the verdict which had been delivered previously by the coroner's jury, the members of which had deliberated without the invaluable aid of his survey.

In his survey of the Balmain Colliery workings, he found it necessary, as a preliminary, to transfer his azimuth, in one operation, from the surface to a depth of 2,920 ft. To overcome the unsteadiness of the plummet, which was continually and markedly inclined to the vertical (owing to descending water, strong air currents, and so on), he had recourse to various devices to obtain a satisfactory datum point below for his survey. He finally obtained satisfactory results by establishing a base line of 16 feet in length, swinging the plummets (31 lb.) freely in the air, and taking the mean of a series of oscillations as being the point vertically beneath the point of suspension of the plummet wire at the surface.

He was appointed Chief Mining Surveyor in 1902, a position which he held until his appointment in January, 1916, as Under Secretary of Mines.

He was a member of the Royal Australian Historical Society, and he was enabled to elucidate many difficult points in the interpretation of the records of certain explorers, by reason of his intimate knowledge of field survey methods, and of woodcraft in the State, together with his general knowledge of geography, geology and botany. Thus, although the journals left by the explorers did not always indicate definitely the paths followed by them, nevertheless Cambage was enabled to trace their paths by the land-marks mentioned by them. The bibliography attached indicates the more important of these retraced exploring paths.

His youthful experience at National Park caused him to question the completeness of the geological map of the area at that period, because of the peculiar vegetation which favoured a certain rock formation. Subsequent examination proved him to be right in relying upon the botanical indications. In 1828, Surveyor Florance had surveyed the coastal district of Ulladulla. In 1915, Cambage carefully examined Florance's field-book, and he noted there an entry "Two Flints". On visiting the spot, he noticed the rocks mentioned by Florance, and secured specimens for examination by the Department of Mines. As a result, this flinty material was ascertained to make an excellent firebrick, and an important industry was thereupon commenced.

Cambage retired from the Public Service on the 7th November, 1924. In addition to the positions held by him successively of Mining Surveyor, Chief Mining Surveyor and Draftsman, Under Secretary and Superintendent of Explosives, he occupied many other positions of trust in the State Civil Service, such as Chairman of the Prospecting Board, Mine Managers' Examination Board, and Licensed Surveyors' Examination Board.

Very little opportunity was afforded him for recreation, or even for the home life he so much valued, by reason of the increasing demands made on his time in non-official hours. More and more, as time progressed, was he besieged with requests to assist in the organization and administration of scientific, and related, societies and institutions, and in many other ways he assisted most definitely in the removal of the disabilities under which Science labours generally.

Positions of increasing responsibility and honour came during the period 1909-1928 inclusive. He was Secretary to the Royal Society of New South Wales for the period 1914-1928, with the exception of the years 1923 and 1924;

he was President of that Society in 1912 and 1923. To our Society, of which he had been a member since 1899, and a member of the Council since 1906, he contributed eighteen papers dealing with local plant assemblages in Australia. He was elected President in 1924.

He was an Elective Trustee of the Australian Museum from 1925 until his death.

He accepted the position of Honorary Secretary to the Australian National Research Council at its inception in 1919, and continued in that important position until 1926. As Secretary, he had the onerous task of organizing the Second Pan-Pacific Science Congress, held in Melbourne and Sydney in 1923. He was elected President of the Council for the period 1926-1928, and he was elected President of the Australasian Association for the Advancement of Science in 1928. Cambage, Sir T. W. Edgeworth David and Sir David Masson are the only scientists who have held both these important positions.

He was created C.B.E. in 1925. He, however, looked not so much to such a minor and belated recognition of his services as his true reward, as to the joy which comes from creative work undertaken in the quest of Truth.

It must not be forgotten that Cambage took an intense interest in ordinary human activities amid his scientific work. He was a member of the Masonic Order and held high office in local lodges. He retained his boyish enthusiasm to the last. This was shown in various ways. He had a great love of children, and had a wonderful way of explaining things simply to them. Sickness among his friends aroused his deepest sympathy and affection. Music affected him deeply, especially that composed in the major key. To the very last, the mere contact with Nature would set him whistling and singing tunes like a schoolboy on a holiday. Sports such as cricket appealed strongly to him. He attended all Test and Sheffield Shield matches, as well as many grade matches. He knew from memory all the major batting and bowling records since 1881. He was no indifferent player himself at the game. At Milton, one of his instructors in bowling was "Twopenny", a member of the team of aborigines which visited England in 1868.

Perhaps one of the most interesting sidelights shed on Cambage's nature is furnished by his association with the work of the "Australian Wattle League", founded in 1909 in Sydney, to inculcate the spread of a definite "wattle" sentiment in Australia. He attended the first meeting, and remained an enthusiastic member of Council from its inception. He occupied positions of Vice-President and Acting President. Members of our Linnean Council with whom he co-operated in this work will remember his keen desire to effect beautification of city and country landscapes by means of well selected Australian plants. His favourite method was to enlist the active and practical sympathy of children and adolescents, as he felt that, by this means, the work would be simplified and rendered more popular and permanent. The success of the efforts of himself and of his colleagues is reflected in the spread of "wattle" planting both in public and private gardens.

He married Fanny Skillman (died 1897), daughter of the late Henry Skillman. Their family consisted of two sons, Arthur and Geoffrey, and two daughters, Mabel and Muriel (Mrs. Holt). Both sons served in the European War.

Cambage, like J. H. Maiden, was deeply religious, but it was the ethical side of religion which appealed most to him.

Death came most unexpectedly, from an attack of heart disease, on the 28th November, 1928, at a time when, to all appearances, he was enjoying the best

of health. He became ill and died suddenly at his home, "Wyaglan", 49 Park Road, Burwood. A host shares the sorrow of his going. Tributes to his character have come in from all quarters. This feeling of general loss has been summarized by Walkom in the obituary note in our PROCEEDINGS for 1929:

"He will be sadly missed by all his colleagues and friends, for he possessed, to a rare degree, the qualities of tact, moderation, charitable judgment, and geniality, which made him beloved by all who knew him."

The loss which we all feel does not dim, rather does it reveal clearly, the advance and enrichment of science generally by workers such as Cambage, with the added joy, as exemplified in his life, of harmonious co-operation in scientific research.

E.C.A.

LIST OF PAPERS BY R. H. CAMBAGE.

(Prepared by Mabel F. Cambage.)

1901-1903.

Notes on the Botany of the Interior of New South Wales. Parts i-vii. PROC. LINN. Soc. N.S.W., Vol. xxv, pp. 591, 708; Vol. xxvi, pp. 197, 317, 685; Vol. xxvii, pp. 186, 561.

1904-1926.

Notes on the Native Flora of New South Wales. Parts i-xi. PROC. LINN. Soc. N.S.W., Vol. xxix, pp. 685, 781; Vol. xxx, pp. 203, 376; Vol. xxxi, p. 432; Vol. xxxiii, p. 45; Vol. xxxiv, p. 310; Vol. xxxvi, p. 541; Vol. xxxvii, pp. 617, 622; Vol. xlii, p. 673; Vol. li, p. 315.

1905.

Notes on the Eucalypts of the Blue Mountains. PROC. LINN. Soc. N.S.W., Vol. xxx, p. 190. (*With J. H. Maiden.*)

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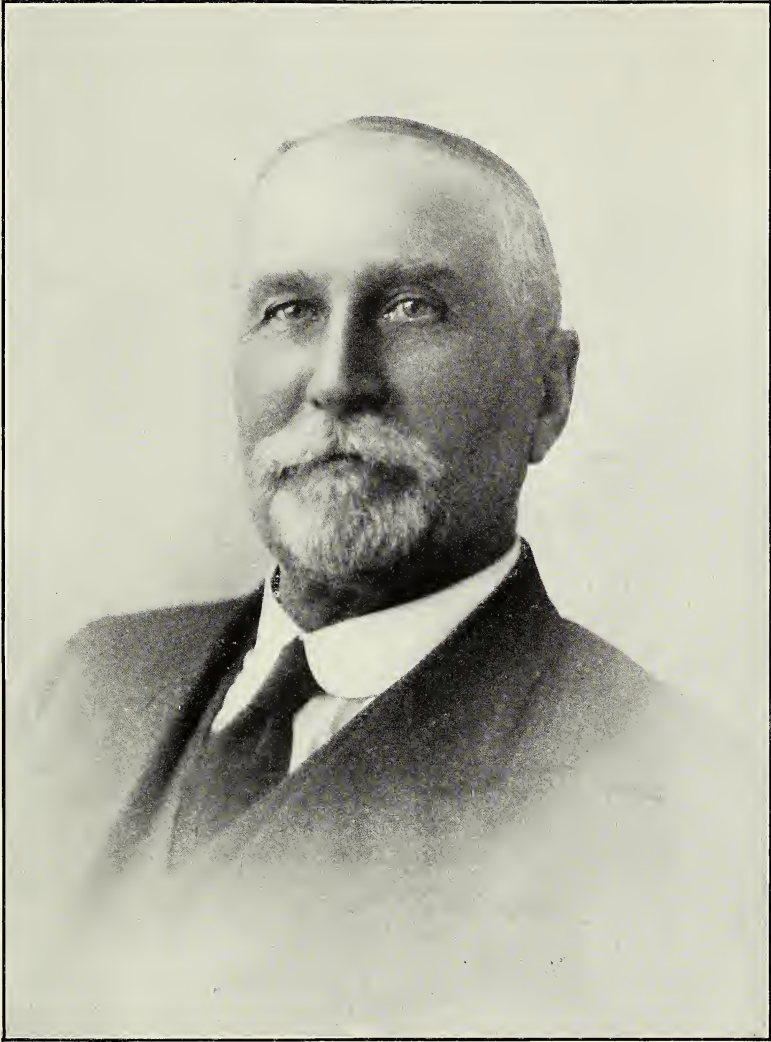
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R. H. Lambage